PASSIFLORA PUSILLA (PASSIFLORACEAE), A NEW SPECIES FROM CENTRAL AMERICA

During the course of an ongoing study of Central American Passifloraceae, the following distinctive new species has been found in collections generated by the *Flora de Nicaragua* project and from older Costa Rican collections.

Passiflora pusilla MacDougal, sp. nov. TYPE: Nicaragua. Chontales: Hacienda Corpus, W of Juigalpa, ca. 100 m, 12°07′N, 85°28′W, 14 June 1984, *Stevens 22968* (holotype, MO; isotype, HMNH). Figure 1.

Passiflora hirsuta nana, scandens vel decumbens; caulis 12–55 cm longus, triqueter vel subtriqueter; petioli eglandulosi; folia trilobata, basi cordati, lobis obtusis vel truncatis, marginibus integris; pedunculi singulares uniflori; bracteae nulli; coronae filamenta biseriata, filamentis interioribus submicroscopicis, 0.2–1.5 mm longis; operculum plicatum; ovarium dense puberulum; fructus 3.5–4 cm longus, 0.5–0.7 cm latus, anguste fusiformis, sexangularis; semina dentibus seriebus 2 longitudinalis dispositus.

Diminutive, weakly climbing or often decumbent herb, 12–55 cm long, often fertile within 10–15 cm of its base. Roots perennial, the primary root 2.5–4 mm diam.; 1–5 annual stems arising from axillary buds at base of stem. Plant hirsutellous throughout with cylindrical, straight or slightly antrorsely bent, unicellular but often many-septate pelucid trichomes (0.1–)0.4–1.4(–1.8) mm long, these generally intermixed with microscopic, appressed trichomes 0.06–0.08(–0.1) mm long. Stem triangular or subtriangular (drying sulcate), 3-carinate, nearly glabrous below, becoming puberulent above with microscopic, appressed trichomes, and conspicuously hirsute on the carinae with trichomes (0.1–)0.4–0.6(–0.8) mm long. Stipules (2.5–)3–4(–5) × 0.4–0.5 mm, narrowly lanceolate to linear-triangular, subfalcate, hirsute, greenish, the apices not necrescent. Petioles 1–2.5(–3.6) cm, eglandular, canaliculate, sometimes tinged purplish. Laminae 1–2.4 × 2–4.5 cm at fertile nodes, depressed obovate in general outline, cordate at base, very shallowly 3-lobed (and in one collection, very rarely the lateral lobes shallowly and obscurely lobed at base), the lateral lobes obtuse, ± rounded, the central lobe broadly obtuse or nearly truncate, the angle between lateral lobes (80–)85–100 (–108)°, ratio of lateral to central lobe lengths 1.1–1.4, ratio of laminar width to length 1.6–2.2, the margins entire and minutely setose to strigose; laminar nectaries absent. Tendrils absent, or present at distal nodes and then capillary and nonlignified; posture of developing tendrils and shoot apex unknown. Prophyll of vegetative ramifying bud 1, narrowly ovate, caudate. Peduncles solitary at nodes, 4.5–15(–21) mm, uniflorous, ebracteate. Flower ca. 1 cm diam., with 1–1.7 mm stipe (elongating to 1.7–3 mm in fruit), the hypanthium 3.5–4 mm diam., hirsute, the longer trichomes often borne 0.1–0.2 mm above the surface of the epidermis on cylindrical, slightly raised bases; sepals 7 × 1.8–2.2 mm, lanceolate, pale yellowish green; petals 2.7–3.5 × 1–1.3 mm, narrowly ovate or oblong, pale yellowish green; filamentous corona in 2 series, the outer 5–6 mm long, yellow toward apex, yellowish green to greenish below and sometimes with 1–3 narrow purplish bands at base or in lower half; inner series rudimentary, the members few, borne at base of operculum, 0.2–1.5 mm, capillary, slightly clavate; operculum 0.7–1 mm, membranous, the margin erose, plicate; nectary with annulus or nectar ring adjacent to limen; limen (disk) cupuliform, closely surrounding base of androgynophore, its edge ± erect and 0.7–0.8 mm high; staminal filaments connate

4.2–6 mm along androgynophore, the free portions ca. 2 mm long; anthers 1.8–2.1 mm long, ovary 1.4–1.8 × 0.7–1 mm, narrowly obovoid or ellipsoid, 6-ridged or hexagonal in cross section, densely puberulent with appressed trichomes 0.05–0.1 mm long; styles ca. 3 mm?; stigmas capitellate. Fruit 3.5–4 × 0.5–0.7 cm, narrowly fusiform or fusiform, the stipe often indistinct, distally caudate, hexagonal and 6-carinate, sparsely and minutely puberulent, dehiscent; arils whitish, scanty, shorter than seed; seeds 3.1–3.4 × 1.7–1.8 mm, obovate, obliquely beaked at chalazal end, the short beak sharply angled toward the raphe, with 2 longitudinal rows of teeth (or 5–6 transversely sulcate, the ridges traversed by a broad longitudinal furrow).

Phenology. This is a species of strongly seasonally dry habitats, and it apparently dies back to the ground each dry season. The small size of the plant suggests that it may flower and set seed within only a few months of germination; nevertheless, nearly all of the specimens studied were collected with roots intact and show remnants of dead shoots from previous seasons. The short herbaceous shoots may be expected to emerge after the spring rains in April. Flowering from May through the summer and into the end of the rainy season, *Passiflora pusilla* has been found in fruit from late June to November.

Habitat and distribution. In the low tropical dry and gallery forests in the general vicinity of Lake Nicaragua, this passionflower is associated with the distinctive soil type called "sonsocuite" in Nahuatl. This sticky black soil is alkaline, poorly drained, and is seasonally inundated. It supports a forest of low stature, with *Crescentia*, *Cordia*, and mimosoids like *Acacia*, but has been mostly converted to pasture or intensive cultivation of cotton, rice, or sesame. This small passionflower has been found mainly below 300 m elevation in partial shade at the edges of the "sonsocuite," on banks at the edges of roads and pastures, or in the shade of associated gallery forest. There are two records from a disturbed area at 800 m on the Meseta Central of Costa Rica.

The specific epithet refers to the very small size of this plant.

Paratypes. COSTA RICA. GUANACASTE: Santa Rosa National Park, 30 km W of Liberia, 0–320 m, 10°50′N, 85°35′W, 18 Aug. 1984 (fr), *Janzen 12412* (MO); 5 km NE of Bagaces, 95 m, 22 July 1964 (fl, fr), *Jiménez M. 2136* (F); W of airport, 10 km W of Liberia, 0–100 m, 10°30′N, 85°34′W, 25 June 1977 (fl), *Liesner & Rockwood 2516* (MO); 23 km SW of Liberia, 10°24′N, 85°34′W, 1–200 m, 23 July 1964 (fl, fr), *Tessene 1424* (WIS). SAN JOSÉ: Santa Ana [9°56′N, 84°11′W], 800 m, 25 Nov. 1963 (fl, fr), *Jiménez M. 1319* (F); Brasil de Santa Ana [9°56′N, 84°13′W], 800 m, 2 June 1957 (fl), *Rodríguez C. 464* (UC). NICARAGUA. CHONTALES: Hacienda Corpus, W of Juigalpa, ca. 100 m, 12°07′N, 85°28′W, 20 May 1984 (fl), *Stevens 22898* (MO, HMNH).

Passiflora pusilla is referred to subg. *Plectostemma* Masters sect. *Xerogona* (Rafinesque) Killip on account of the small flower with a plicate operculum, subtriangular carinate stem, absence of either floral bracts or extrafloral nectaries, dehiscent fusiform fruit, and testal architecture of a chalazal beak sharply angled towards the raphe with a fundamentally transversely grooved sclerotesta. The dehiscent, hexagonal, fusiform fruit of *P. pusilla*, characteristic of sect. *Xerogona*, is known in its fully mature state only from *Jiménez M. 2136*.

Passiflora pusilla is perhaps most similar vegetatively to *P. tenella* Killip. *Passiflora tenella* is endemic to the Pacific tropical deciduous forests of Ecuador and Peru (Holm-Nielsen et al., in press). The two species share a very reduced size, similar eglandular leaves, and solitary peduncles. The laminae of *P. tenella* differ, however, in being less pubescent (especially abaxially), with the apices of the lateral lobes acute and the angle between them broader. The ovary of *P. tenella* is nearly glabrous. Its fruit, although also fusiform, is shorter and relatively broader, lacking the caudate apex seen in *P. pusilla*; whether it dehisces is unknown. The seed of the South American species differs greatly by being transversely sulcate with five rugulose ridges. Killip (1938) placed *P. tenella* in sect.

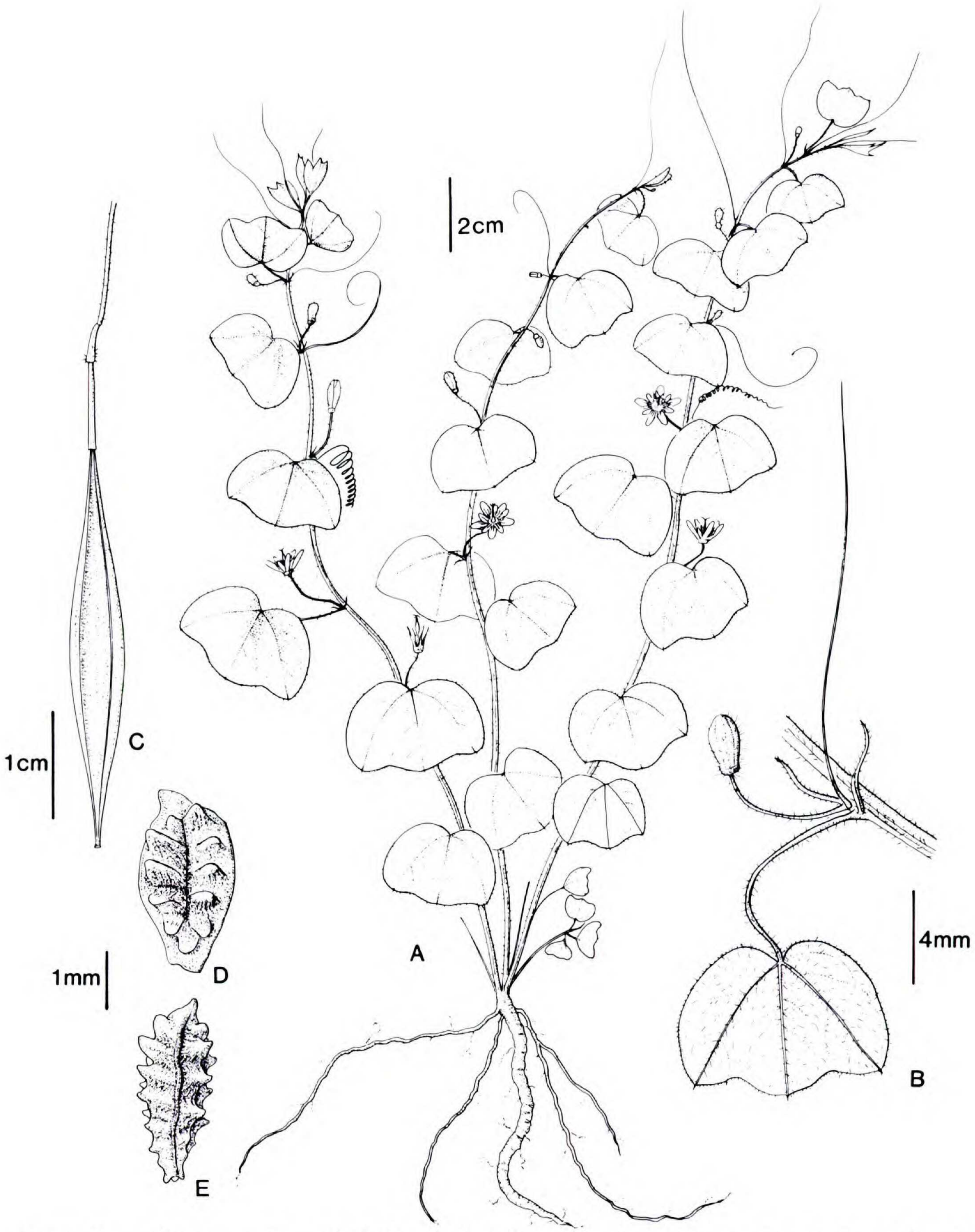

FIGURE 1. —Passiflora pusilla.—*A. Habit.*—*B. Detail of leaf, node, stipules, and peduncle.*—*C. Nearly mature fruit.*—*D, E. Seed.*

Decaloba (DC.) Mast., rather than in sect. *Xerogona*, based on the rugulose testal ridges and the presence of floral bracts. A close kinship between *P. pusilla* and *P. tenella*, phytogeographically plausible due to the close relationship of their respective habitats and vegetation types (Gentry, 1982), cannot be confirmed without further study of the poorly understood South American species.

Passiflora pusilla is also similar to both

P. conzattiana Killip and *P. goniosperma* Killip of Mexico. *Passiflora conzattiana* is a small, low-growing, often prostrate vine of wet montane or *Liquidambar* cloud forests in eastern Mexico. It has similar leaves, small flowers, and very similar fruits, but is a larger plant having apically truncate to lunately bilobed laminae with acute to acuminate lateral lobes, generally less pubescence, and seeds with five or six smooth transverse ridges. *Passiflora goniosperma* is likewise very similar and is from a more similar seasonally dry habitat in southern Mexico. This poorly known species is also a larger plant, having more deeply bilobed leaves, larger fruits, and unusually sculptured seeds that have a single toothed ridge down the length of the face of the testa. Both the more glabrous race of the Pacific tropical deciduous forests and the densely pubescent typical race from central Oaxaca share this form of seed (MacDougal, unpubl.). In contrast, the seed of *P. pusilla* has a furrow in the comparable position with two rows of teeth on either side. Both Mexican species possess only a single series of coronal filaments that are conspicuously and nearly uniformly reddish purple below their yellowish tips.

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—*John M. MacDougal, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.*